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## **Requesting and providing information in blogs and Internet discussion forums**

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### **Abstract**

**Purpose** – The major aim of this study is to find out whether people articulate their information needs and provide information to others differently in online sites of various types, more specifically, blogs and Internet discussion forums.

**Design/methodology/approach** – The study is based on the analysis of ten blogs and 40 threads of *Suomi24*, a Finnish Internet discussion forum. The blogs and discussion threads focus on the same topic, that is, coping with depression. For the study, 1044 blog postings, 1727 bloggers' and blog readers' comments and 1236 messages written by the discussion forum participants were analyzed by means of descriptive statistics and qualitative content analysis.

**Findings** – The bloggers, blog readers and discussion group participants mainly articulated needs related to getting an opinion or evaluation of an issue, while needs for factual information and procedural information about possible ways of action were presented less frequently. Information provision drew strongly on the use of personal knowledge. There were no remarkable differences between the types of online sites with regard to the articulation of information needs and using sources for providing information to others.

**Research limitations/implications** – The findings are based on the analysis of a limited number of Finnish blogs and discussion threads in the field of coping with depression. Thus, the findings cannot be generalized to all online forums of these kinds.

**Practical implications** – Blogs and Internet discussion forums provide useful sites to pose questions for online contributors and to get opinions as well as factual information about the ways to cope with depression.

**Originality/value** – The study is unique in that it compares information needs and information provision in online sites of various types.

Article Type: Research paper

Keyword(s): Blogs, Internet discussion groups, information needs, provision of information

### **Introduction**

Blogs and Internet discussion forums provide novel sources for everyday life information seeking and sharing. Research literature indicates that an increasing number of people engage in online forum discussions, either as active participants or silent observers (Nicholas *et al.*, 2007, pp. 11-12). This is because such forums can

help in problem solving, information sharing, and provision of mutual support and empathy; in addition, such arenas are usually not discriminatory. Unfortunately, so far, there is little empirical knowledge of how Internet discussion forums and blogs are used in everyday contexts. Blogs epitomize the forums of Web 2.0 while discussion forums have a longer tradition leading back to the 1980s when bulletin boards and Usenet newsgroups were established. Since that time, discussion forums have been renewed technically and they have become more easily accessible.

The most intriguing question motivating the present study is whether bloggers, blog readers and Internet discussion forum participants differ with regard to their information needs and ways to provide information to others? This question is novel because earlier studies have focused on individual online forums such as Usenet newsgroups (see, for example, Wikgren, 2001). As the present study adopts a comparative approach, it may also shed new light on the particular features of the use of blogs and Internet discussion forums. The present investigation elaborates the issues discussed in two earlier studies focusing on the ways in which dietary blogs are used in information seeking and information sharing (Savolainen, 2010a) and how such blogs can be used in the provision of informational and emotional support (Savolainen, 2010b). The present study provides a novel perspective in that it concentrates on how the online contributors articulate their information needs and how they provide information in order to answer questions posed by others. Second, the study contributes to the research tradition of everyday life information needs and sharing by showing how people make use of the opportunities provided by Web 2.0 technologies.

Different from the above studies, the present study focuses on a new subject area, that is, coping with depression. This subject is important since depression exemplifies one of the most common health problems in today's society. Lifetime prevalence of depression varies widely, from 3 per cent in Japan to 17 per cent in the United States (Andrade *et al.*, 2004; Kessler *et al.*, 2003). In most countries the number of people who suffer from depression during their lives falls within an 8–12 per cent range. As these percentages suggests, the issues related to depression are far from trivial. On the other hand, a considerable percentage of people interested in the issues of mental health are seeking information on the Internet. For example, the general population survey conducted by Powell and Clarke (2006) in Britain showed that 18 per cent of all Internet users had used the Internet for information related to mental health. The prevalence was higher among those with a past history of mental health problems and those with current psychological distress.

The article is structured as follows. First, a review of earlier research focused on information sharing in blogs and Internet discussion forums in health-related context is presented. Then, the research questions and design of the present study are specified and the empirical findings are reported. The article is concluded by the discussion of the main results of the study.

## **Related literature**

### *Depression as a health problem*

In general, depression may be defined as a state of low mood and aversion to activity. According to the National Institute of Mental Health (2010), depressed persons usually experience or display some of the following symptoms:

- Persistent sad, anxious or "empty" feelings

- Feelings of hopelessness and/or pessimism
- Feelings of guilt, worthlessness and/or helplessness
- Irritability, restlessness
- Loss of interest in activities or hobbies once pleasurable, including sex
- Fatigue and decreased energy
- Difficulty concentrating, remembering details and making decisions
- Insomnia, early–morning wakefulness, or excessive sleeping
- Overeating, or appetite loss
- Thoughts of suicide, suicide attempts
- Persistent aches or pains, headaches, cramps or digestive problems that do not ease even with treatment.

So far, there is no single known cause of depression. It is believed that it likely results from a combination of psychological, genetic, biochemical, and environmental psychological factors (National Institute of Mental Health, 2010). Depression is often a predictable response to certain types of stressful life occurrences such as death of a child or spouse, divorce and loss of job or status. Risk for depression also results from the influence of multiple genes acting together with environmental or other factors. In addition, depression may be due to that the parts of the brain responsible for regulating mood, thinking, sleep, appetite and behavior appear to function abnormally. In this case, important neurotransmitters –chemicals that brain cells use to communicate – appear to be out of balance. Depression often coexists with physical disorders common among the elderly, such as stroke, and Parkinson's disease (Yohannes & Baldwin, 2008). Alcoholism or excessive drug consumption significantly increases the risk of developing major depression (Fergusson *et al.*, 2009).

### *Information sharing in everyday contexts*

In general, information sharing may be understood as a set of activities by which information is provided to others, either proactively or upon request, such that the information has an impact on another person's (or persons') image of the world and creates a shared, or mutually compatible working, understanding of the world. (Sonnenwald, 2006) In the broadest sense, information sharing may include providing information, receiving information provided by other people, confirming receipt of the information, and confirming that the information is jointly understood. Thus, the process of information sharing incorporates two major aspects: providing information to others to be shared, and receiving information that has been given for this purpose. Since the present study focuses on the former aspect, the issues related to receiving information are not discussed in greater detail.

Basically, the questions of information sharing deal with the ways in which people use their knowledge communicatively, for example, by drawing on contact networks. From this perspective, information sharing is a major characteristic of actors such as opinion leaders and gatekeepers (Agada, 1999). Within this tradition, one of the earliest studies on information sharing was conducted by Chatman (1987). She explored the ways in which women enrolled in a subsidized employment program shared information. Of the participants, those identified as opinion leaders engaged in more information exchange than those not so identified. However, the opinion leaders were unwilling to share job information because they themselves needed information

of this type that might result in permanent employment. Another study of information sharing among elderly women residing in a retirement complex revealed that they tended to avoid risk taking by not telling anyone about declining health concerns, thus giving up to seeking information or gaining emotional support (Chatman, 1992).

Some of the previous studies have made use of the concept of social capital in order to put information sharing in a broader context. In general, social capital may be made understandable by referring to networks, norms, trust and mutual understanding that bind together the members of human networks and communities, thus enabling participants to act together more effectively to pursue shared objectives (Widén-Wulff & Ginman, 2004, p. 449). From this perspective, information exists as an embedded resource or an opportunity in social networks, and in general, the use of the resources is directed by obligations to reciprocate (Hersberger, 2003, p. 100). The studies on information grounds conducted by Fisher and her associates (2005; see also Fisher and Naumer, 2006) drew on the ideas of social capital and social networks. They showed that the construct of information grounds is particularly relevant for the study of information sharing, since these grounds serve as everyday contexts for this activity. It is characteristic of information grounds such as pubs that people gather there for a primary, instrumental purpose other than information sharing and that people engage in information sharing (Fisher and Naumer, 2006, pp. 98-99; Fisher *et al.*, 2007). Interestingly, information grounds may also be virtual. For example, Internet discussion forums can be conceptualized as virtual information grounds that serve the ends of information sharing.

Information may also be shared in the context of information encountering or incidental information seeking, because the information received this way may be forwarded to others. Information sharing based on these motives has much in common with “information seeking by proxy”<sup>i</sup> identified by McKenzie (2003), that is, information is received without seeking since someone else looks for information and shares it with others on their own initiative. In a survey focusing on the ways in which university students share information encountered on the Web Erdelez and Rioux (2000) found that the most frequently used methods of sharing were writing an e-mail and email forwarding. Information was also shared by copying and pasting a URL hyperlink to useful information in an email message. As to the content of information, the students most often shared entertainment and personal types of information; work or study related information was also shared. Overall, the findings of the above study suggest that the Internet provides an instantaneous and fairly effortless tool for sharing information. Naturally, the flip side of this development may be the growth of the information overload of the recipients, and the devaluation of “information gifts” obtained by forwarding e-mail messages.

Savolainen (2008, pp. 189-199) reviewed information sharing among environmental activists and the unemployed people. The study focused on the motives of information sharing. The major motives included serendipitous altruism to provide help to other people, and pursuit of the ends of seeking information by proxy. Since in most cases information sharing was driven by altruistic motives, the lack of reciprocity did not in practice weaken the motives of this activity. It appeared, however, that in the case of sensitive information, information sharing tends to be restricted by calculations of the risk of information leakage against benefits obtained from the personally rewarding experience of providing important information to others (cf. Chatman, 1987).

### *Internet discussion forums and blogs as online sites*

Internet discussion forums date back to the mid 1990s, and they could be described as a web version of *Usenet* newsgroups that were established in the early 1980s. Essentially, Internet discussion forums are web applications managing user-generated content (vBulletin Community Forum, 2010). Distinct from the Usenet newsgroups, visiting and participating in Internet discussion forums normally requires no additional software such as a newsreader: only a web browser is needed. In the Internet discussion forums, a *post* is a user submitted message enclosed into a block containing the user's details and the date and time it was submitted. Posts are contained in *threads*, where they appear as boxes one after another so that the first post starts the thread focusing on a topic. A thread is a collection of posts, usually displayed from oldest to latest. A thread can contain any number of posts, including multiple posts from the same members, even if they are one after the other (Wikipedia, 2010).

Weblogs, or blogs can be generally defined as frequently updated websites consisting of dated entries arranged in reverse chronological order so the most recent posting appears first (Walker Rettberg, 2009, p. 191). Boyd and Ellison (2007, p. 211) characterize blogs as web-based social network sites (SNSs). They allow individuals to construct a public or semi-public profile within a bounded system. Distinct from Internet discussion forums, SNSs such as blogs are primarily organized around people, not interests (Boyd and Ellison, 2007, p. 219). More specifically, Internet discussion forums are structured by topics or according to topical hierarchies, but blogs are structured as personal or "egocentric" networks, with the individual at the center of their own community.

Blogs allow limited exchanges (in the form of comments), while the author retains ownership of, and ultimate control over, the blog's content. The blog readers' comments are generally made in relation to what the blogger writes (Brake, 2009, p. 171). As Boyd (2006, p. 634) has put it, bloggers perceive their blogs as though it is "their home" and readers are invited to come over. Blog readers are regarded as guests or visitors and, as such, they are expected to respect the sovereignty of their host. Therefore, readers are expected to behave in a friendly and supportive manner in the blog's discussion area.

### *The use of discussion forums and blogs*

The use of bulletin boards, discussion groups and Usenet newsgroups has been reviewed in numerous studies since the 1980s both in work-related and non-work contexts (see, for example, Matzat, 2004; Savolainen, 2001). Some of the early studies reviewed information seeking in discussion groups. Berman (1996) explored the purposes of the use of two discussion groups in the field of social work. Information seeking appeared to be quite frequent in these forums since because the share of messages containing a request was 23 per cent in the former group and 11 per cent in the latter. Based on a sample of 4 300 messages downloaded from Usenet, BITNET and CompuServe discussion groups, Rafaeli and Sudweeks (1997) found that about 15 per cent of the messages contained a request for information. Providing information for others was more frequent because 40 per cent of the messages served this end.

Savolainen (2001) reviewed the seeking and provision of consumer information in an Internet discussion group. The study drew on the analysis of about

900 messages posted in November 1999 - January 2000. About 9 per cent of the messages contained questions indicating explicit information needs, while 24 per cent of messages contained answers to questions. This suggests that information provision is fairly frequent in the discussion groups. Help providers strongly preferred their own experience as an information source, since 94 per cent of messages relevant to help provision drew on personal knowledge. The information providers also referred to experts or expert organizations as information sources. For example, consumer agencies were often mentioned in this context. However, the discussants rarely made references to traditional sources such as daily newspapers, magazines or printed books. The networked sources such as individual Web pages also were insignificant in this sense, since only 3 per cent of messages relevant for information provision referred to them.

The number of studies on blogs has increased in recent years (for recent overviews of blog studies, see Aharony, 2009, pp. 174-175; Schmidt, 2007, pp. 1409-1410). General level surveys have charted the number of blogs and sociodemographics of bloggers, gender differences in blog use (Lu *et al.*, 2010), as well as the motives and ways of blogging (Nardi *et al.*, 2004). In addition, surveys have been undertaken to explore blog author characteristics, frequency of posts, usage of blog features, and frequency of commenting (see, for example, Herring *et al.*, 2005). According to general surveys of these kinds, the majority of blogs are of the personal journal type, which deals with the bloggers' personal experiences and reflections (Schmidt, 2007, pp. 1409-1410). On the other hand, quantitative studies have indicated that most blogs attract modest numbers of visitors. Although technically available for the world to see, most blogs are highly personalized diaries written for small, select online communities (Gunter, 2009, p. 123).

### *Sharing health-related information in discussion forums and blogs*

Health-related online forums can be generally described as online settings in which people who are in a similar life situation exchange factual information and emotional support to help each other (Rodgers and Chen, 2005). Due to the importance of support provided by these groups, they are also called *online support communities* (Pfeil *et al.*, 2010). Online forums of this kind are dedicated to a single health-related topic, and they offer technical medical information, practical advice on coping, emotional support through a sense of virtual presence, and online second opinions (Burnett and Buerkle, 2004).

Empirical studies have reviewed the role of online forums in a variety of subject areas such as maternity care, cancer, diabetes, infertility, binge eating disorder, social phobia, and depression (Owen *et al.*, 2010, p. 429). For example, Schoch and White (1997) examined the interactions in two listservs, one dealing with a chronic illness (diabetes type 1), and the other with a more acute disease (colon cancer). Data consisted of 1000 messages from each list randomly selected in 1996. The study showed that questions indicating information needs accounted for 26 to 28 per cent of all messages on the lists. Answers to questions or opinions concerning them were more general since in almost all the messages (91 per cent for Colon list and 97 per cent for Diabetic list) (Schoch and White, 1997, pp. 284-286). This suggests that electronic lists function as sources of information as well as forums where information sharing takes place.

A study examining the use of a Usenet newsgroup on diabetes revealed that the overwhelming majority of messages provided informational support, for

example, by specifying individual case histories and diet-related issues (Loader *et al.*, 2002). In addition, the newsgroup served the ends of social companionship support and self-esteem support, that is, encouragement and attempts to bolster the poster's spirits. In a study focusing on 30 discussion threads from the Usenet newsgroups in the field of nutritional matters Wikgren (2003) found that about 13 per cent of all postings entailed direct requests for information. A handful of persons were especially active in passing on advice and references. The information providers drew heavily on Web sources since they constituted about 80 per cent of the cited sources. The participants relied strongly on full-text scientific journals available on the Web, whereas the printed publications cited were mostly diet books.

Coulson (2005) found that within a computer-mediated support group for individuals living with irritable bowel syndrome, informational support was most frequently provided. More recently, Meier and associates (2007) explored how cancer survivors offer support on cancer-related Internet mailing lists. The most common kind of support was information and advice based on the experience of survivors. Four major themes were associated with survivors' offers of information and advice: specific treatments; communicating with health care providers to find the best treatment; problem management strategies; and coping with cancer recurrence. Explicit emotional support was less frequent than informational support. In general, the seekers reported that they were looking for both informational and emotional support.

Eichhorn (2008) investigated the top 5 Yahoo! eating disorder support groups by drawing on a sample of 490 postings. She analyzed the type of social support provided and the strategies used to solicit social support. About 54 per cent of the messages posted solicited some type of social support, while about 56 per cent provided some type of support. Of the messages that solicited support, 25 per cent requested information. Of the messages, about 30 per cent provided informational support. Chang (2009) investigated online supportive interactions within a psychosis social support group in Taiwan. Again, the findings indicated that the most exchanged support types were information and network links (Chang, 2009, p. 1514).

More recently, Pfeil and her associates (2010) analyzed messages from the depression discussion group within SeniorNet ([www.seniornet.org](http://www.seniornet.org)), an online support community for older people. The data consisted of 961 messages posted during August, 2000 - August, 2006. The study concentrated on sequences of the messages such as self-disclosure – factual information. The latter category included factual questions and answers about topics such as depression drugs. The study demonstrated that basic conversation within the online support community consists of an initial mutual exchange of self-disclosing messages in order to build a common ground among members of the online community. Once this is achieved, the basis is laid for answering self-disclosing messages. Interestingly, it appeared that message-sequences of factual information – factual information, that is, question – answer occurred fairly independently from the level of activity within the online community. Such sequences were very concentrated, occurring extensively at once (Pfeil *et al.*, 2010, pp. 357-358). This suggests that the exchange of factual information may not be a central part of the communication contributing to the sustainability of the online support community.

Finally, we may review recent studies on how blogs are used in health-related contexts. Chung and Kim (2008, p. 302; 304) showed that cancer patients and companions found blogging activity to be most helpful for emotion and information-sharing, followed by problem-solving and prevention and care. Findings indicate that

blogs function primarily as tools for emotion management and information-sharing rather than as tools for problem-solving or prevention and care. In addition, cancer patients and their companions reported gaining information through their blogging activities and also found the information to be satisfactory. Karimi and Poo (2009) investigated the factors affecting medical bloggers' information sharing behaviour. Enjoyment in helping others and reputation were found to have significant direct effect on information sharing, while encouragement by others, identification, and interaction ties showed no significant direct affect.

More recently, Savolainen (2010a; 2010b) examined how dietary blogs are used in information seeking and sharing. The study draws on the analysis of a sample of eight Finnish blogs. The findings suggest that the blogs primarily serve the ends of information sharing, while they are less frequently used to seek information from other contributors. The bloggers mainly solicited emotionally oriented support by describing problems faced in the dieting efforts and reporting experiences of personal success. About 63 per cent of the postings solicited support of some kind. The readers commenting on the bloggers' postings primarily offered informational support, esteem support and emotional support. About 65 per cent of the comments provided support of various kinds. However, blogs do not primarily offer factual information since the main emphasis is laid on the sharing of experiences and opinions.

## **Research questions**

The findings of earlier studies discussed above provided a firm background for the specification of the research questions of the present investigation. The studies of information sharing indicate that information exists as an embedded resource or an opportunity in social networks in particular. These studies also suggest that information can be shared proactively or upon expressed needs. Further, information can be shared by using information grounds of various kinds, both physical and virtual. It also appeared that information can be shared by drawing on motives such as serendipitous altruism to provide help to other people, and pursuit of the ends of seeking information by proxy.

In order to direct the research focus into the issues of articulating information needs and providing information to others in online forums, the present investigation drew on the studies of Eichhorn (2008), Schoch and White (1997), Savolainen (2010a; 2010b) and Wikgren (2001; 2003). Importantly, these studies demonstrate that online forums can be used in a variety of ways to seek and provide informational and emotional support. However, previous studies have been specified sufficiently enough to demonstrate how people articulate their information needs while using blogs and Internet discussion forums of newer types characteristic of Web 2.0. Second, earlier studies have not detailed how people make use of information sources in these forums in order to help participants who express information needs. To bridge gaps in research, the main objective of the study is to investigate comparatively whether (and how) the information needs and the ways of providing information to others differ among bloggers, blog readers and Internet forum participants. More specifically, the present study addresses the following research questions:



- How do bloggers, blog readers and Internet discussion forum participants differ with regard to articulating information needs for coping with depression, as expressed in blog postings and comments?
- How do the above actors differ with regard to using information sources of various kinds in order to provide information to others about coping with depression?

In order to sharpen the focus of the study, a few limitations appeared to be necessary. Most importantly, no attempt will be made to detail the connections between information needs, seeking and provision. Thus, the present study does not analyze individual message sequences such as information need -> information seeking, or information need -> providing information to others (cf. Pfeil *et al.*, 2010). Second, the study does not review how the online contributors assess the relevance of information provided in the blogs and Internet discussion forums. Apparently, tackling the above issues would have required a separate study.

## **Empirical data and analysis**

### *Blogs*

The empirical data were gathered in the spring 2010 from Finnish blogs and discussion groups focused on coping with depression. The blogs were identified from the list of Finnish language blogs (<http://www.blogilista.fi>). By using keywords such as "depression" and "mental health", about 600 blogs were identified in February 2010. However, on a closer consideration, only a part of them appeared to be relevant for the needs of the present study. To obtain a preliminary picture of the blogs, a sample of 30 blogs with most recent updates were selected from this list. The preliminary reading disclosed a considerable variation with regard to the content of individual postings, as well as the ways the readers commented on them. Some of the blogs only tangentially dealt with the issues of depression since they focused on other topics such as eating disorders. To identify blogs that would serve best the ends of the study, the sampling criteria were specified. Blogs to be taken in the empirical analysis should:

- mainly discuss issues related to coping with depression
- contain at least 10 postings and 30 comments in order to enable the study of the interaction between the bloggers and blog readers
- contain postings that cover a sufficient period of time in order to reflect the ways in which the bloggers attempted to cope with depression. The period should cover at least one month; however, the period should not exceed 12 months because a longer sample frame would have resulted in a disproportionately high number of postings and comments.

Of the 30 blogs selected for the preliminary sample, ten blogs met the above criteria. Purposive sampling was employed because the goal of the study is to make inferences about the nature of the information needs and the ways of providing information in blogs rather than the size of the blogosphere or individuals active in blogging. More specifically, following Hayes (2005, p. 43) and Gobo (2006, p. 414), no random sampling was taken because the representativeness of the sample was evaluated by

considering the variance of the types of information needs articulated and information sources used, instead of the variance of the individuals who contribute to processes of information provision.

In the blogs selected for empirical analysis, the shortest period covered three months (1 December 2009 – 26 February 2010) and the longest one year (1 March 2009 - 28 February 2010). The ten blogs analyzed in the present study contained 1044 postings. Thus, there were 104 postings per blog on average. The number of postings per blog ranged from 54 to 210. Of the 1044 postings, 48.7 per cent were commented upon by the blog readers. There was considerable variation between the blogs, however, since the share of postings that attracted blogs reader's comments varied from 33.3 per cent to 93.3 per cent. In total, 1727 comments were written by the readers and the bloggers in the blogs' discussion areas. Thus, on an average, there were 173 comments per blog. However, the number of comments per blog varied considerably. The lowest number of comments was 32 and the highest 555. Of the comments, 83.6 per cent were written by the blog readers and 16.4 per cent by the bloggers. Again, there appeared to be considerable differences between the blogs. At the lowest, the share of comments written by the blogger was 0.6 per cent and at the highest 43.7 per cent. In total, 324 readers commented on the postings. Thus, on average, 32 readers commented on a blog. However, the variation was considerable since the number of commenters per blog ranged from 8 to 79. The distribution of comments written by blog readers appeared to be highly skewed. Of the blog readers 47.5 per cent wrote only one comment, while 16.4 per cent wrote two comments and 6.5 per cent wrote three comments. The rest (9.6 per cent of blog readers) contributed four or more comments.

### *Internet discussion forum*

The threads of an Internet forum discussing the issues of depression were selected in the beginning of February 2010 from *Suomi24* (Finland24). It is the largest online discussion forum in Finland (<http://keskustelu.suomi24.fi/debate/3881>). At that time, discussions at *Suomi24* forum were divided into 57 main topics such as traveling, hobbies, sports, society and health. The category of health included a number of sub-topics like alcohol and drugs, cancer, dieting, and mental health. The last mentioned sub-category was further divided into themes like shyness and depression. The present study focuses on the theme of depression that contained about 250 discussion threads. The threads to be taken in the analysis were selected by drawing on two major criteria:

- The thread should mainly concentrate on the issues of coping with depression
- The thread should contain at least 10 messages in order to provide a sufficient number of articulations of information needs and instances of providing information

The selection criteria of the threads versus blogs differed in that the period of time with regard to threads was not restricted. This is because even the longest threads contained only about 100 messages. Thus, from the viewpoint of research economy, there was no need to truncate the threads.

The list of threads was checked by starting from those with the newest updates. Some of the thread candidates were rejected because the issues of depression appeared to be secondary. In addition, there were a number of recently launched threads containing

less than 10 messages. Finally, altogether 40 threads were selected for the analysis. This appeared to be a sufficient sample for the needs of the present study. It is evident that the inclusion of additional threads would not have essentially changed the quantitative and qualitative picture of the information needs and provision in depression-related threads.

The periods of threads varied considerably. The longest period covered about 6 years (18 February 2004 - 4 March 2010), while the shortest period entailed only four days (16 - 19 February 2010). In most cases, however, the periods covered 2-3 months (January/February - March 2010). The 40 threads analyzed in the present study contained 1236 messages. Thus, on an average there were 31 messages per thread. The number of messages per thread varied, however. The highest number was 122 and the lowest 10. Of the messages, 16.3 per cent were written by the initiators of the threads, while the rest (83.7 per cent) were written by the other participants. There were considerable variation among the initiators, since 14 out of 40 wrote only the message initiating the thread. The most active initiator wrote 33 additional messages within a thread. At the highest, an initiator produced 45% of messages of a thread, while the lowest share was 1.4 per cent.

The total number of other participants who wrote messages was 585. Thus, on an average, a thread attracted 15 participants in addition to the initiator. The variation between the threads was considerable since the number of participants ranged from 3 to 58. The most active participant wrote 29 messages within a thread. Similar to the blogs, the distribution of messages written by the participants was highly skewed. Of the participants, 78.5 per cent wrote only one message, while 10.4 per cent wrote two and 4.3 per cent three messages. Only 7.8 per cent of the contributors wrote four or fewer messages.

### *Data analysis*

The empirical data were analyzed both quantitatively and qualitatively. The quantitative analysis provides an overall picture of the nature of information needs expressed in online forums, and the use of information sources used in information provision. Qualitative analysis enriches this picture by providing descriptions of the experiences of individual contributors.

The blog postings, blog readers' comments and messages written by the discussion forum participants were first downloaded in separate files. Then, the data were coded by identifying the articulations of information needs and the sources used in information provision. The coding of the data was an iterative process in which the data were scrutinized several times by the present author. This procedure was repeated until saturation was reached and a set of categories was found to describe the data appropriately.

In the coding, one posting, comment or message could be sorted into one or more categories. In the coding of information needs, ideas drawn from the categories of Interaction Process Analysis developed by Bales (1950) were used (cf. Savolainen, 2010a). These categories indicate the need for (i) factual information, (ii) opinion or evaluation of an issue, and (iii) procedural knowledge, that is, the needs to know about possible ways of action. The need for factual information can be exemplified by questions such as "What is your daily dosage of depression drug X?" A need for opinion or evaluation can be expressed by articulations such as "Would the use of drug X really heighten the mood of people with serious depression?" Finally, a need for procedural knowledge may be exemplified by questions like "How

should I go on in order to get a referral to cognitive therapy?

To strengthen the validity of the study, only explicit questions indicating uncertainty or lack of knowledge were coded as information needs. Thus, for example, rhetoric questions presented by the contributors or implicit doubts concerning an issue were not interpreted as indicators of information needs. Sources used in information provision were identified inductively by drawing on my earlier study focused on a consumer discussion forum (Savolainen, 2001). Sources identified this way included, for example, personal knowledge, networked sources and printed sources. In the coding, an information source of some type was included only if the contributor made an explicit reference to it. The examples include a reference to a website visited, a book read or own experience used in problem solving.

A category of information need or a type of an information source was coded only when it was identified for the first time in the posting, blog reader's comment or message written by a discussion forum participant. In long blog postings in particular, it was not unusual that the same issue was discussed in several segments of the same posting. In these cases, once the posting was coded for a category, for example, need for factual information, other instances of information needs of this type were simply ignored. The same procedure was applied in the coding of information sources used for the needs of information provision. In the coding, the categories discussed above appeared to be specific enough to capture the variation of information needs and information provision.

The data were first analyzed quantitatively by means of descriptive statistics. Percentage distribution was calculated for the messages indicating information needs and providing information to others among bloggers, blog readers and discussion forum participants (see Tables I and II below).

The above analysis was complemented by qualitative study that drew on the constant comparative approach (Lincoln and Guba, 1985, pp. 339-344). More specifically, an attempt was made to capture the variety of articulations of the information needs and the ways in which the online contributors provided information to other participants. Particular attention was devoted to how the contributors drew on information sources of various types while providing information.

Importantly, the sample of 10 blogs and 40 discussion threads appeared to be large enough for the drawing of a good qualitative and indicative quantitative picture of the nature of information needs and provision. As to the qualitative analysis, the number of postings, comments and messages appeared to be sufficient because the data became saturated. Thus, it became evident that the analysis of additional blogs and discussion threads would not have essentially changed the qualitative picture. As to the quantitative study, the data were sufficient for the needs of descriptive statistics, that is, the determination of percentage distribution of the categories of information needs and the sources used in information provision.

In the analysis of the data, particular attention was devoted to the ethical concerns. Researchers agree that informed consent is not required if the setting of data collection is regarded as public (Eysenbach and Till, 2001; Pfeil *et al.*, 2010, p. 344). Drawing on the above researchers it can be claimed that the Internet is a public domain and that messages posted on the Internet are intended for the public. Thus, people should know and expect that their messages will be read by a wide audience. Since blogs and the Internet discussion forum (Suomi24) studied in the present article are public and thus freely accessible to all interested in depression-related issues, blog postings, blog readers' comments and the messages posted by Internet forum participants can be seen as contributions which are intended to elicit public interest or

to influence the views of other people. Seen from this viewpoint, these data no longer belong in the private sphere of communication such as an email message sent to a friend. Due to their public nature, the messages mailed to online forums may also be utilized for research purposes, provided that the identity of an individual writer is sufficiently protected.

Even though no attempts were made to obtain consent from the online contributors, their anonymity is protected carefully. First, they will not be identified by their nicknames or pseudonyms. Instead, the contributors are referred to by technical codes. For example, B-2 stands for Blogger 2 and B8R-4 for Reader 4 commenting on the postings written by Blogger 8, while DT14P-2 refers to Participant 2 who contributed to discussion thread 14. Second, all information about the submission dates for postings, comments and messages was deleted from the quotations. This procedure makes it very unlikely that an individual contributor could be identified from the excerpts originally written in Finnish.

## **Empirical findings**

### *Information needs*

The ten bloggers articulated at least one uncertainty indicating an information need of some type in 154 postings or comments written by the blogger. This means that 11.6 per cent of the bloggers' postings or comments were relevant from the perspective of information needs. Almost without exception, the bloggers articulated their information needs in the postings; the bloggers' comments presented in the blog's discussion area rarely indicated any information needs. In comparison, 135 comments out of 1444, that is, 9.3 per cent of the comments written by the blog readers indicated an information need of some type. Thus, the bloggers appeared to be slightly more active than blog readers in articulating information needs of some kinds.

In *Suomi24* discussion forum, 220 messages out of 1236, that is, 17.8 per cent of all messages explicitly indicated at least one information need. Thus, as a whole, the discussion forum participants were somewhat more active than bloggers and blog readers in presenting information needs. The initiators of the discussion threads wrote 28.2 per cent of such messages and other participants 82.8 per cent. Table I specifies how the information needs of various types were articulated by the online contributors.

Type of needed information	Blogger (n = 154)	Blog reader (n = 135)	Discussion forum participant (n = 220)
Opinion or evaluation of an issue	68.8		72.3
Fact	14.9		20.9
Procedure (way of possible action)	16.2		6.8
Total	99.9	100.0	100.0

**Note:** n = 509

Table I. Percentage distribution of messages indicating information needs among bloggers, blog readers and discussion forum participants

Table I shows that in all three groups, the majority of information needs manifested themselves in requesting for an opinion or evaluation of an issue. About 69 per cent of bloggers' information needs drew on such questions, while the share of such needs was even higher (72.3 per cent) among the discussion forum participants. The needs for factual information were presented most frequently among the blog readers, since every third comment indicating an information need dealt with requesting a fact. Discussion forum participants also were active in articulating the needs for factual information. The third type of information need, that is, ways of possible action was most frequently articulated by the bloggers (about 16 per cent of postings related to information needs). Among the blog readers and discussion forum participants, however, the role of information need of this type remained quite marginal.

#### *Qualitative picture of information needs*

The quantitative picture presented in Table I can be elaborated by characterizing in more detail how the online contributors articulated information needs of various types. Bloggers and blog readers are discussed first, followed by the Internet discussion group participants.

#### *Bloggers and blog readers*

As Table I indicates, the major part of information needs articulated by bloggers and blog readers focused quite equally on the needs for opinion or evaluation (about 69 per cent versus 64 per cent). A considerable part of the information needs of this type dealt with the usefulness of diverse pharmaceuticals and therapies used in the care of depression. In addition, the blog contributors sought for opinions dealing with the strategies for coping with depression in daily life. A few examples taken from the postings illustrate the nature of information needs of this kind.

I'm just wondering why my mood varies so much? To balance it, should I take some kind of a sedative, in addition to many pills I already have? (B-4)

I wonder whether I should allow the doctor to hypnotize me. Would this method provide me with a way to capture all memories that are inaccessible right now? Would this be worth trying? (B-10)

The needs for opinion or evaluation articulated by blog readers mainly originated from specifying questions posed to the bloggers. Similar to bloggers, the main part of topics related to such questions dealt with the details of diverse therapies and the side effects of pharmaceuticals.

Has this drug been of any use? Has it decreased your timidity or has it heightened your mood? (B9R-13)

How easy would it be to get a referral to compulsory treatment? Is it sufficient enough if you appear to be suicidal? (B4R-2)

As Table I demonstrates, blog readers were most active among the online contributors in articulating needs for factual information. The needs for factual information entailed a broad repertoire of issues. The topics ranged from the details of diverse therapies to the side effects of diverse pharmaceuticals used in the care of depression. The bloggers seldom articulated questions related to the needs for factual information. In most cases, such questions were not always directed to the blog readers because it was expected that the answers will mainly be provided by the health professionals.

In fact, I have thought over the possibility of trying electrotherapy. I will call my doctor tomorrow and ask about the details. (B-4)

The factual questions posed by the blog readers most often dealt with the further specification of the issues described in the bloggers' postings.

What kind of therapy have you had so far? Have you ever tried analytic or cognitive therapy? (B5R-11)

What sedatives are you taking now? *Oxamin*? *Opamox*? (B10R-59)

As Table I shows, the bloggers were most active in presenting questions dealing with the ways of possible action in problematic situations, while the blog readers seldom posed such procedural questions. Again, the topics of questions presented by the bloggers varied to some extent.

Yesterday I made *Beck's Depression Test* and scored 35 points. This means 2 points more than a month ago. Should I tell my doctor about this or not? (B-2)

I don't know what to say to my doctor next time. I just don't know whether I should go to the hospital or prefer the treatment of outpatients.  
(B-4)

#### *Discussion forum participants*

The major part of messages indicating information needs among discussion forum participants focused on the needs for an opinion or evaluation of an issue (see Table I above). Among discussion forum participants, too, most of such needs concentrated on the qualities of diverse drugs and therapies used in the cure of depression. However, different from the bloggers and blog readers, the forum participants were particularly interested in opinions related to the use of depression drugs and experiences gained from their side effects.

I wonder whether my endless fatigue has been caused by that medicine, *Citalopram*? (DT30P-29)

I have taken *Sertralin* for six months and gained weight some six kilos. Anyone else having experiences with gaining weight caused by a depression drug? How about their side effects? (DT19P-1)

Table I suggests that discussion forum participants were quite active in articulating needs for factual information. Such needs resembled those posed by the blog readers. Similar to the blog readers, the discussion group participants posed specifying questions that focused on the details concerning the pharmaceuticals, as well as the opportunities to get therapy.

What is your dosage of *Lyrice*? (DT8P-13)

What kind of laboratory tests are required if you are suspected to suffer from depression? (DT16P-3)

Table I shows that the discussion forum participants were not particularly interested in presenting information needs dealing with the possible ways of action. Interestingly, the initiators of the threads were somewhat more active to pose questions of this type. As "agenda setters" they resembled more the bloggers than the fellow participants in the discussion forums. In a few cases, the initiators of the discussion thread posed a question focusing on the needs of how to proceed.

Currently, my life is empty and suicide seems to be the best alternative. I have got disappointed so many times during my life. I would like to know your opinion: how to go on? (DT3P-4)

The participants in the discussion forums also asked for concrete advice for how to manage everyday problem situations.

I'm afraid of how the psychologist is going to treat me. I have not visited a psychologist before. Please, let me know about your experiences. Should I start by telling my story or does she help me by posing some specific questions? (DT38P-3)



### Providing information to others

The bloggers provided information by answering questions posed by blog readers. In turn, the readers provided information by answering the questions presented by the bloggers. However, such provision of information took place quite rarely in postings since only 0.9 per cent of them served this purpose. In the blogger's comments, however, information provision was more frequent since 21.2 per cent of the comments provided information to the blog readers. Counting bloggers' postings and comments together ( $n = 1327$ ), altogether 5.3 per cent of them indicated explicitly the efforts to provide information to others. In turn, 6.6 per cent of the blog readers' comments served the ends of information provision. While providing information, both bloggers and readers made references to information sources of various kinds.

In the discussion forums, 41.9 per cent of all messages served the ends of providing information to others. Thus, the discussion forum participants appeared to be more active than the blog contributors in answering questions posed by others. The sources used in the provision of information are specified in Table II.

Type of information source	Blogger ( $n = 70$ )	Blog reader ( $n = 88$ )	Discussion forum participant ( $n = 518$ )
Personal knowledge (own experience)	95.7	95.5	88.6
Expert or expert organization	1.4	0	3.1
Human sources	0	0	0.4
Networked sources	2.9	4.5	6.2
Printed sources	0	0	0.8
Other sources	0	0	0.9
Total	100.0	100.0	100.0

**Note:**  $n = 676$

Table II. Percentage distribution of messages indicating the use of sources for providing information among bloggers, blog readers and discussion forum participants

Table II demonstrates that the information provision very heavily drew on the use of personal knowledge among the bloggers and blog readers. In both groups, about 96 per cent of the answers were based on this type of an information source. The bloggers and blog readers also drew to some extent on networked sources while providing information. In this context, the bloggers also referred to experts or expert organizations. The discussion forum participants also strongly drew on their personal knowledge in information provision. The role of sources of other types remained marginal. For example, experts and expert organizations and printed materials were referred to very seldom. As a whole, the online contributors rarely made use of external sources for the ends of providing information to others.

### *Qualitative picture of providing information to others*

Quantitative picture presented in Table II can be specified by reviewing how the online contributors made use of information sources of various types in information provision. Similar to the previous sections, the bloggers and blog readers will be discussed first, followed by discussion group participants.

### *Bloggers and blog readers*

As Table II demonstrates, personal knowledge was clearly the most significant source of information while providing answers to questions posed by the blog contributors. Similar to information needs and information seeking discussed above, there was a wide variation of topics about which information was provided. To illustrate the ways in which information was offered by drawing on sources of various types, questions presented by the inquirer (blogger or blog reader) are presented first in the excerpts.

*Question:* Has your new drug had any effect? Have you experienced any side effects? (B7R-26)

*Answer:* In fact, there has been no side effects so far. At first, my anxiety was so strong that I had to take sedatives but it went away in a week. The new drug tends to stress my stomach but I can avoid this by eating before I take it. (B-7)

*Question:* Should I report to *Kela* (= The Social Insurance Institution of Finland) that my rent has been increased? I would like to get housing allowance for retired people? (B-5)

*Answer:* Yes, you have to report that. You may get more money that way. Even if you would not, you have to make the report. In addition, the landlord should provide you with a document about the increased rent. You may then take it with you and visit the office. (B5R-6)

The role of sources other than personal knowledge remained marginal in the provision of information. However, a few references were made to experts or expert organizations in this context.

*Question:* Did your therapist mention about the possibility that you would have an identity disorder? (B10-R-42)

*Answer:* My therapist told me about this a year ago. She referred to various parts of my personality and said that some of them have been "cut off". (B-10)

The bloggers and blog readers seldom referred to human sources such as fellow readers as sources that were used the provision of information.

*Question:* How are you doing with the drug? (B5R-13)

*Answer:* The drug has caused some nausea. However, the increased dosage has not caused more stress. This may because at first I took only 175 mg per day, following your advice (B-9)

Similarly, networked sources appeared to be a marginal source used in the context of information provision.

*Question:* Are you familiar with the concept of "dissociative identity disorder"? (B10R-21)

*Answer:* Someone asked me whether I'm familiar with the "dissociative identity disorder"? Yes. Its synonym is dual personality. I learned this simply by using Google where you may a lot about this topic (B-10)

#### *Discussion forum participants*

Similar to the bloggers and blog readers, the discussion forum participants frequently drew on their personal knowledge when providing information to fellow participants. No less than 88.6 per cent of all messages related to information provision referred to the utilization of the participant's own experience (see Table II above).

*Question:* I'm afraid of how the psychologist is going to treat me. I have not visited a psychologist before. Please, let me know about your experiences. Should I start by telling my story or does she help me by posing some specific questions? (DT38P-3)

*Answer:* Visiting a psychologist is like visiting a physician. However, the main difference is that the psychologist will not examine you physically. You just sit down. I'm sure she will be helpful and it will be easy for you to tell her about your problems. She is not going to criticize you, why should she do so? Of course, you may list the main points in your mind and then let her know them. (DT38P-5)

Similar to blogs, many of the questions and answers were related to the use and side effects of depression drugs. Typically, the information provided by the participant drew on her own experience. Sometimes the answers provided conflicting evidence of the side effects of diverse drugs, for example. It was a particular characteristic of the discussion forum that a question often resulted in multiple responses, as illustrated by the following example.

*Question:* But is it so that *Remeron* is one of the worst antidepressants that cause gaining weight? (DT8P-12)

*Answer 1:* Yes, it can be so. However, I have not gained weight at all. I lost weight 4 kilos when I took *Zoloft*. When taking *Remeron*, my weight returned to the previous level. I guess gaining weight is primarily caused by the fact that you eat too much and have not taken physical exercise (DT8P-2)

*Answer 2:* I have gained weight 20 kilos and my friend 10 kilos by taking *Efexor*. Thus, you will gain weight if you take this drug. My current dosage is 375 mg and it has been at that level for a few years. (DT8P-10)

Compared to personal knowledge, the role of other sources remained marginal in the provision of information. For example, only a few references were made to experts or expert organizations as sources of information among the discussion forum participants.

As a booster of the treatment of my depression and insomnia, the doctor prescribed 25 mg to be taken every evening. However, in the morning, about 12 hours after the intake of the pills I burst into an uncontrolled cry. My husband is a physician. He suspected that the effect of the drug has been decreased so that it really causes an uncontrolled bad feeling (DT14P-36)

The discussion group participants seldom referred to human sources when providing answers to the questions posed by others. However, for this purpose, networked sources were referred to more frequently.

*Question:* In general, what is the length of sick leave for patients suffering from difficult depression? Would two weeks be enough, or should there be a need for a longer time, even several months? (DT1P-1)

*Answer:* Please, apply for rehabilitation courses by visiting <http://www.mtkl.fi/fin/tietopankki/kuntoutuminen/kuntoutuskurssit/> and <http://www.mtkl.fi/fin/tapahtumakalenteri/>. The latter site lists courses that are currently available. (DT1P-3)

Finally, a few discussion forum participants used printed sources, e.g., books and magazines for the needs of information provision. Similarly, there were a couple examples of the use of other sources such as drug specifications. Since the use of the sources of these types remained very marginal, no attempt will be made to discuss them in more detail.

## **Discussion**

The present study aimed at two major goals. First, it attempted to specify the picture of the ways in which people articulate their information needs in online arenas, and

how they provide information to other people. Second, an attempt was made to find out whether bloggers, blog readers and discussion forum participants differ in this respect in a chosen field of interest, that is, coping with depression.

As to the information needs, the study revealed that about 12 per cent of the bloggers' postings and comments, 9 per cent of the blog readers' comments and 18 per cent of the messages written by the discussion forum participants contained an information need of some type. The percentages indicate that discussion forums in particular may function as relevant arenas for presenting questions to potential helpers. Previous studies have indicated similar percentages about the generality of information need articulations. Rafaeli and Sudweeks (1997) found that about 15 per cent of the messages of Usenet, BITNET and CompuServe discussion groups contained a request for information. The study conducted by Schoch and White (1996) showed that questions indicating information needs accounted for 26 to 28 per cent of all messages on the mailing lists dedicated to coping with colon cancer and diabetes. Savolainen (2001) found that the share of messages indicating information needs in a consumer discussion group was 9 per cent. Wikgren (2003) demonstrated that in health-related Usenet newsgroups about 13 per cent of all postings entailed direct requests for information. In this light, blogs and discussion forums characteristic of Web 2.0 arenas do not essentially differ from the earlier variants of online arenas.

The present study demonstrated that among the bloggers, blog readers as well as Internet forum participants, the majority of articulations of information needs focused on the needs of getting an opinion or evaluation of an issue (see Table I above). The needs for factual information were presented most frequently among the blog readers, since every third comment indicating an information need was dealing with specifying facts. The third type of information need, that is, procedural information clarifying ways of possible action was most frequently articulated by the bloggers. These findings suggest that the information needs among the above groups are fairly similar. The qualitative analysis of the articulations of information needs supports this conclusion. Thus, it is evident that the type of online site (blog or discussion forum) does not much affect the ways in which people articulate their information needs.

The second research question asked whether the online contributors would differ with regard to the use of sources for the purpose of providing information to others. About 5 per cent of the bloggers' postings and comments indicated information provision of this kind, while about 7 per cent of the blog readers' comments served this end. In the discussion forums, 42 per cent of all messages indicated the provision of providing information. Thus, the discussion forum participants appeared to be far more active than the blog contributors in answering questions posed by others.

To compare, Rafaeli and Sudweeks's (1997) study on the messages of Usenet, BITNET and CompuServe discussion groups indicated that 40 per cent of the messages served the end of information provision. Schoch and White (1997) showed that the share of answers to questions or opinions provided in mailing lists dedicated to coping with colon cancer and diabetes type 1 ranged from 91 to 97 per cent. Compared to the study conducted by Rafaeli and Sudweeks (1997), the above percentages are exceptionally high, and they may be due to differing criteria used in the coding. Savolainen (2001, p. 81) found that 24 per cent of the messages posted to a consumer discussion group indicated information provision to others.

The present study showed that the provision of information draws very heavily on the use of personal knowledge among the bloggers and blog readers. In both groups, about 96 per cent of the answers were based on this type of an information source (see Table II above). The bloggers and blog readers also drew to some extent on networked sources while providing information. The bloggers also referred to experts or expert organizations such as hospitals while providing information. Thus, while providing answers, the bloggers and blog readers very seldom made use of external sources and they almost without exception tapped into their experiences about coping with depression. The discussion forum participants also strongly drew on their personal knowledge while providing answers to questions posed by other contributors. Finally, compared to the blog contributors, the discussion forum participants were more active in using networked sources for the needs of information provision. As a whole, however, the three groups did not markedly differ from each other. The qualitative analysis of the postings, blog comments and messages submitted to discussion forums provided further evidence for the conclusion that the type of online arena does not markedly affect the ways in which information sources are used in order to provide information to others.

The fact that online help providers preferred their own experience as an information source is not surprising in the light of earlier studies. For example, Chen and Hernon (1982, p. 52) in an extensive telephone survey found that people tend to favour their own experience in everyday life information seeking. No less than 74 per cent of the informants reported that they consulted their own experience as an information source. Savolainen (2001) provided similar conclusions about the ways in which the participants of a consumer discussion forum share information; 94 per cent of the messages indicating information provision drew on personal knowledge. More generally, these findings suggest that online contributors do not spend much time and energy to seek information sources beyond their personal knowledge. This is understandable since it is often easiest to provide help by tapping one's own experiences of an issue, rather than trying to find further evidence from external sources.

## **Conclusion**

Blogs and Internet discussion forums are used quite actively in presenting information needs and providing information about coping with depression. However, the study is limited in that it draws on a narrow slice of ten Finnish blogs and 40 discussion threads focusing on coping with depression. Therefore, further research is needed to specify the above picture by investigating blogs and discussion forums in various subject areas. In particular, it would be intriguing to analyze in detail the question – answer(s) chains in online sites such as these. In addition, there is a need to analyze the criteria by which the online contributors assess the relevance of information sought and provided. On the other hand, blog postings, comments and messages submitted to discussion forum do not necessarily communicate all information needs experienced by the online contributors or provide a comprehensive list of information sources used in information provision. Thus, to elaborate the picture of information needs and information provision, there is a need to interview bloggers, blog readers and discussion forum participants about their ways to use online forums in the context of everyday information practices.

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